Community Based Treatment of Methamphetamine Addiction: The Delta Model

Nicolas Taylor, Ph.D., CAC III

Taylor Behavioral Health

242 West Main Street, #9 • Montrose, CO 81401 • 970-249-4448
nt.tbh@montrose.net

Welcome to the MENTAL HEALTH MISSOURI DEPARTMENT OF MENTAL HEALTH

2008 Spring Training Institute, May 15, 2008

The need for THEORY

What has to change for someone to stop using METH?

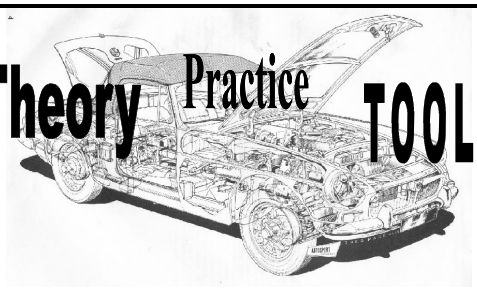
Why do people keep doing METH?

Why is METH so unique??

Do people addicted to METH need special treatment? If so, why??

DELTA Treatment Model

Theory Practice TOOLS



Logical Theory

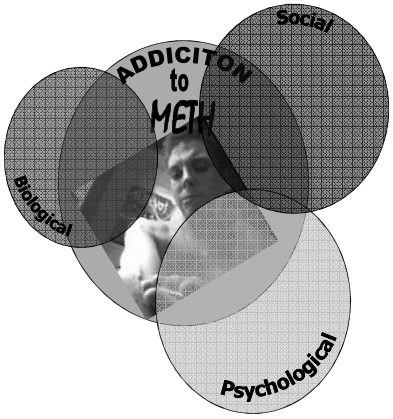
Start by stating your objectives and logically how you see yourself accomplishing those objectives.

Generally speaking, someone who is abusing METH isn't going to stop doing it unless they…

1. Stabilize their pattern of sleeping and eating.
2. Stop hanging around other people who use meth.
3. Have a sober social support group that will welcome them.
4. Learn to feel pleasure without using meth or other drugs.
5. Can handle bad feelings w/out abusing drugs.

Generally speaking, someone who is abusing METH isn't going to stop doing it unless they…

6. Change some of their automatic beliefs and expectations about meth.
7. Change some of their beliefs about sobriety
8. Start learning new things.
9. Find a spiritual purpose to their lives.



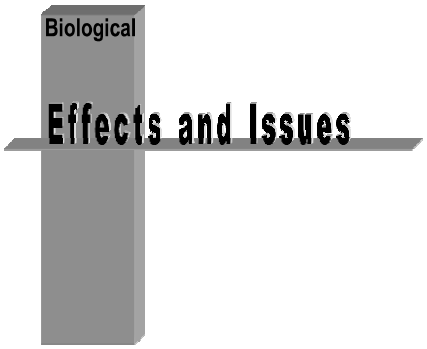
The Delta Model consists of evidenced based parameters to do these very things.

DELTA METH

To not only see how it is that the model is designed to help accomplish these objectives, but also to see why it is so important that these things change for someone to be able to stop using meth, we need to look at some things about meth that make it so unique.

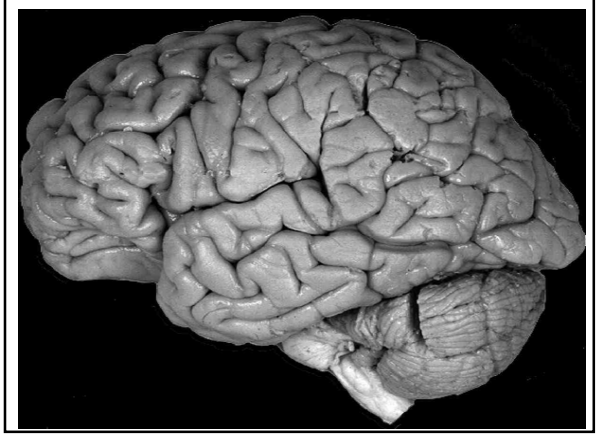
Three Domains of Methamphetamine Addiction

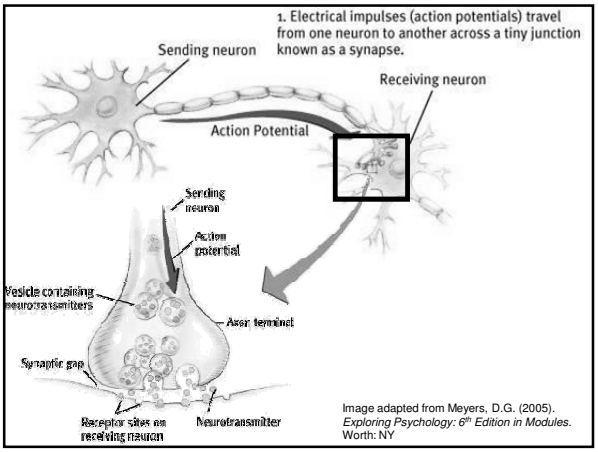
Three Domains of Methamphetamine Addiction



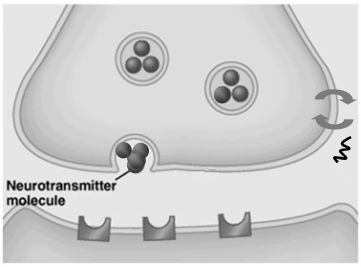
Pharmacological Effect of Methamphetamine

- Sympathomimetic – Mimics the effects of the sympathetic (fight or flight) branch of the autonomic nervous system.
- It increases the release and blocks the metabolism of the catecholamines (epinephrine, norepinephrine and dopamine) as well as serotonin.





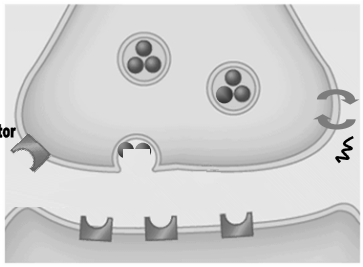
Two Processes of Neurotransmitter Deactiviation



Reuptake Pump

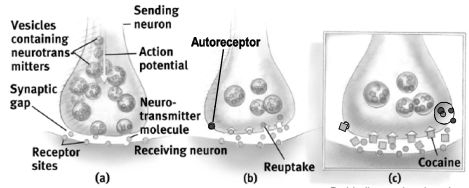
Degradating Ensyme

The Processes of Neurotransmitter Regulation



Pharmacological Effects of Meth (cont.)

The Case of Cocaine



Neurotransmitters carry a message from a sending neuron across a synapse to receptor sites on a receiving neuron.

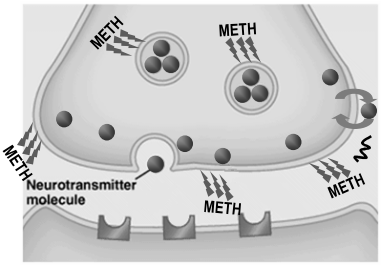
The sending neuron normally reabsorbs excess neurotransmitter molecules through a process called reuptake and autoreceptors on the sending neuron regulate neurotransmitter release.

By binding to the sites that normally reabsorb neurotransmitter molecules, cocaine blocks reuptake of dopamine, norepinephrine and serotonin. Cocaine also blocks the autoreceptor. These actions lead to unregulated release of neurotransmitters with no reuptake. Extra neurotransmitters remain in the synapse intensifying their normal mood altering effects and producing a euphoric rush. When the cocaine level drops, depleted supplies of these neurotransmitters produce a crash.

Image adapted from Meyers, D.G. (2005). *Exploring Psychology: 6th Edition in Modules.* Worth: NY (used with permission)

Pharmacological Effects of Meth (cont.)

The Case of Methamphetamine



Meth damages the "storage sacks" for dopamine (vesicles), leaking dopamine into the cytoplasm.

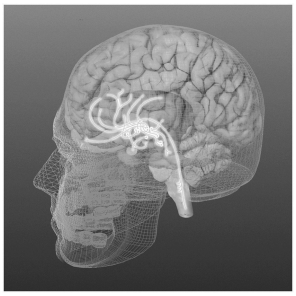
It also damages the neuron's axonal endings such that dopamine "leaks" uncontrollably into the synapse.

Which parts of the brain are most effected by meth use?

- Dopamine Innervated Regions
  - Striatum (Caudate and Putamen)
    - Particularly the Nucleus Accumbens
  - Prefrontal Cortex
- Serotonin Innervated Regions
  - Parietal Cortex
  - Hippocampus

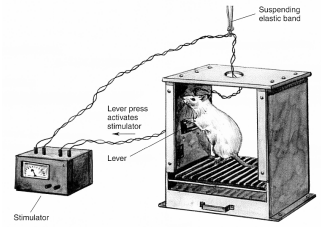
Nucleus Accumbens

- What is it?
  - Part of the mesotelencephalic dopamine pathway



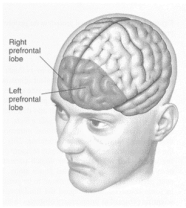
Nucleus Accumbens (cont.)

- What does it do?
  - Part of the basal ganglia so important in voluntary motor responses
  - An important part of the reward circuits in the brain.



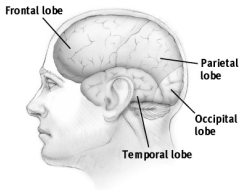
Prefrontal Cortex

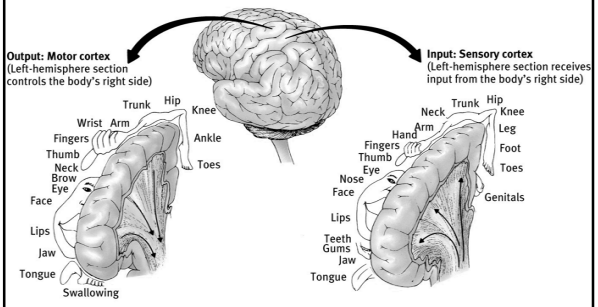
- Personality
- Inhibitions
- Conscience
- Planning



Parietal Cortex (Serotonin)

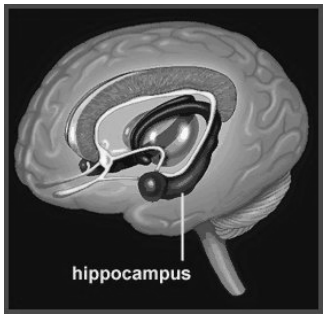
- Important in sensory and motor functioning



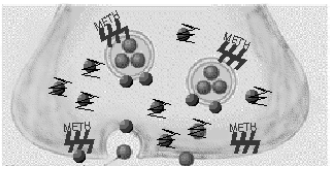


Hippocampus

- Important in memory



The Neurotoxicity of Meth



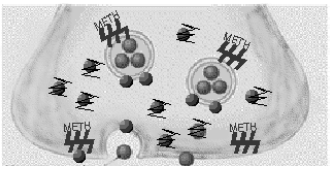
"Leaked" dopamine in the cytoplasm is converted into toxic and reactive chemicals. Effected neurons atrophy and eventually die.

Meth is also metabolized much more slowly than cocaine, resulting in a longer duration of action. The fact that meth is metabolized at a slower rate also allows more time for meth to exert its neurotoxic effects.

Methamphetamine is

NEUROTOXIC!

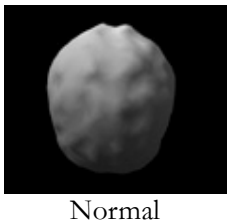
The Neurotoxicity of Meth



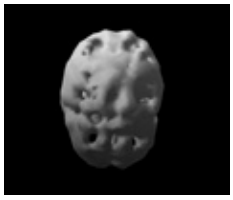
"Leaked" dopamine in the cytoplasm is converted into toxic and reactive chemicals. Effected neurons atrophy and eventually die.

Meth is also metabolized much more slowly than cocaine, resulting in a longer duration of action. The fact that meth is metabolized at a slower rate also allows more time for meth to exert its neurotoxic effects.

"Top-down" Surface View

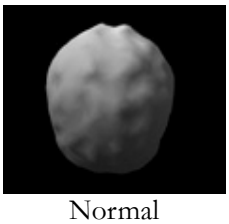


Normal

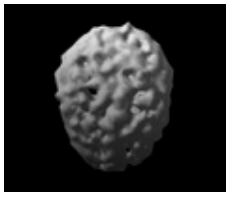


52 year-old with a 28 year history of frequent meth use

"Top-down" Surface View

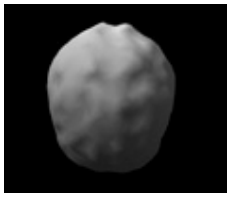


Normal

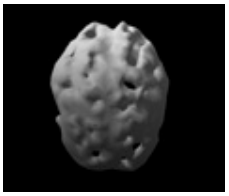


28 year-old with an 8 year history of heavy meth use

"Top-down" Surface View



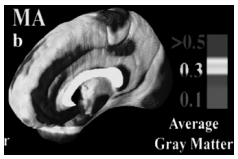
Normal



36 year-old with a 10 year history of frequent meth use

The Neurotoxicity of Meth (cont.)

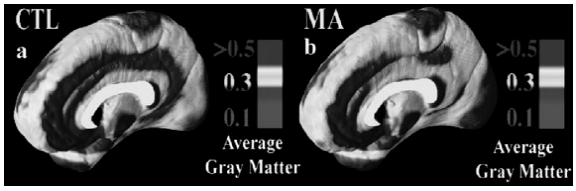
Findings from Recent UCLA Neuroimaging study



Structural Abnormalities in the Brains of Human Subjects Who Use Methamphetamine.

Thompson, P.M. et al. (2005). The Journal of Neuroscience, June 30, 2004, 24(26):6028–6036.

Gray Matter Density

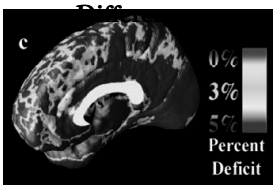


Average Gray Matter Density in 21 Matched Controls

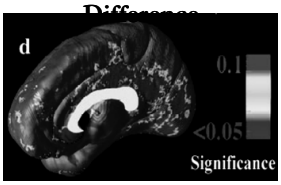
Average Gray Matter Density in 22 Meth Addicts.

Average age=35
15 men — 7 women
Average years of use=10
Average Weekly Dose ≈3gr.

Areas of Greatest Diff

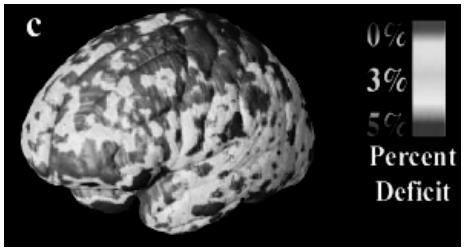


The Significance of the Difference



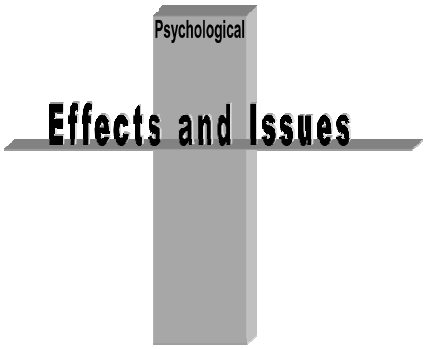
"Most intriguing was the anatomical specificity of the loss. A sharp division occurred … with medial frontal cortices displaying only a trend for loss compared with the limbic cortices that they surround. Although the right medial wall displayed severe deficits, corresponding regions of the left hemisphere and lateral surfaces of both brain hemispheres did not exhibit gray-matter reductions."

General Surface Area Deficits



Significant Differences in Radial Size of Hippocampus

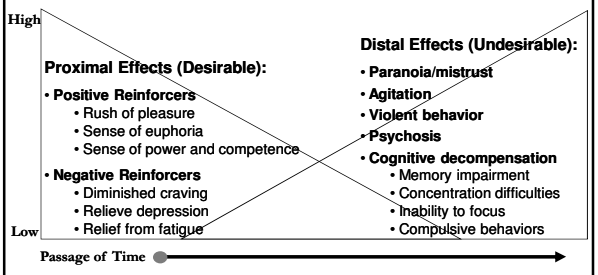
Three Domains of Methamphetamine Addiction

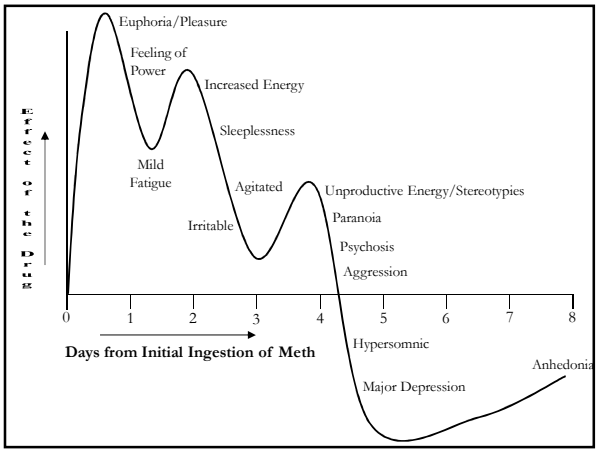


Operant Conditioning Applied to Meth Use

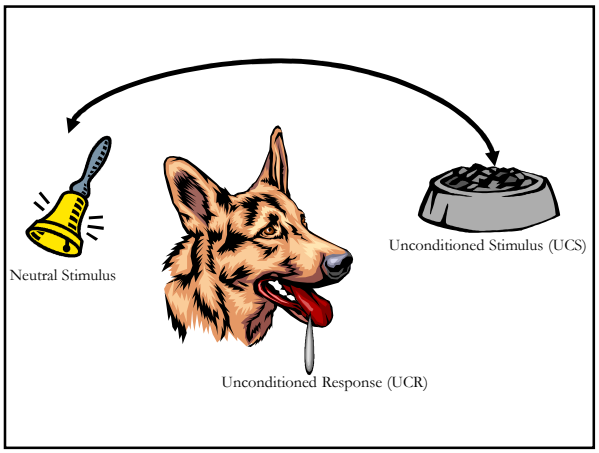
	+ Receive	− Take Away
Pleasant	Positive Reinforcement	Negative Punishment
Noxious or Unpleasant	Positive Punishment	Negative Reinforcement

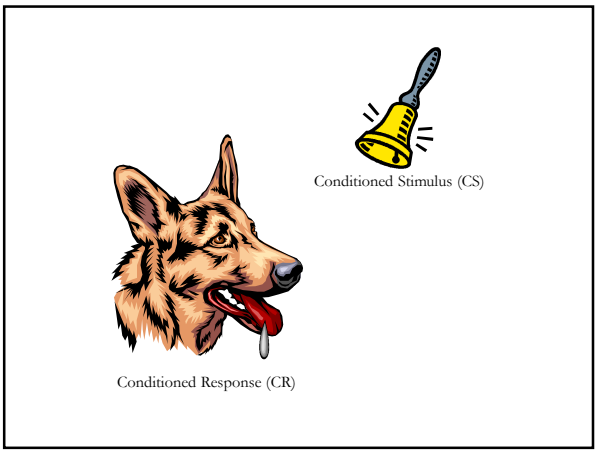
Psychological Effects of Methamphetamine Abuse Over Time

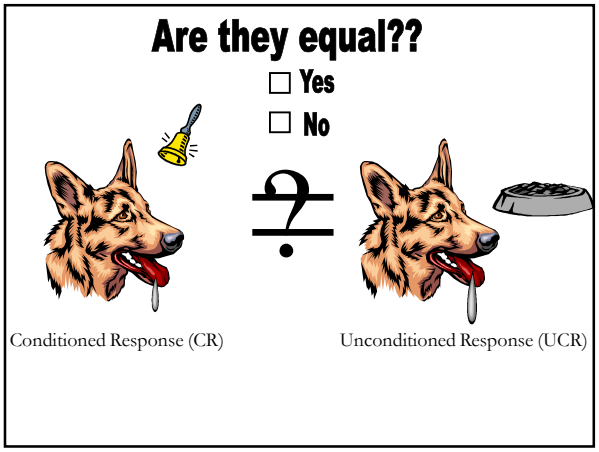


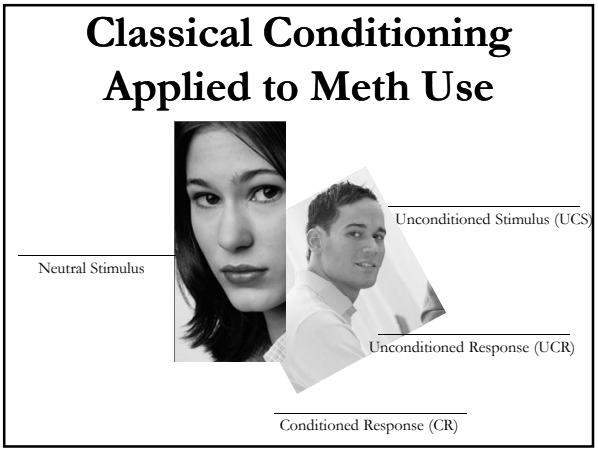


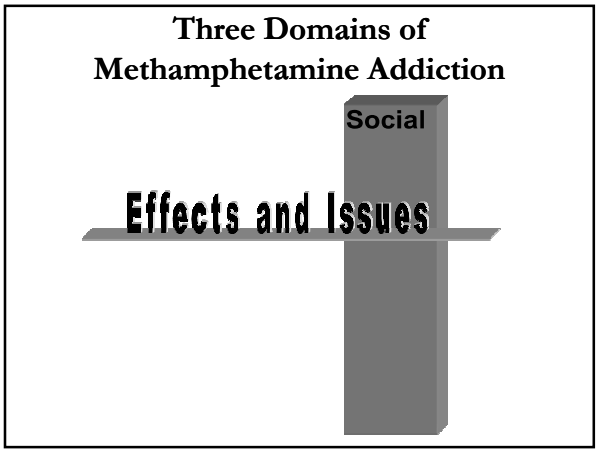
Review of Classical Conditioning

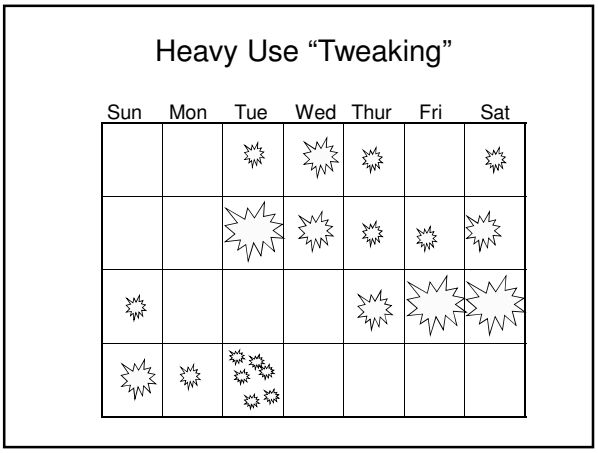

Neutral Stimulus
Unconditioned Stimulus (UCS)
Unconditioned Response (UCR)


Conditioned Stimulus (CS)
Conditioned Response (CR)


Are they equal??
Yes
No
Conditioned Response (CR)
Unconditioned Response (UCR)


Classical Conditioning Applied to Meth Use
Neutral Stimulus
Unconditioned Stimulus (UCS)
Unconditioned Response (UCR)
Conditioned Response (CR)


Three Domains of Methamphetamine Addiction
Social
Effects and Issues


Heavy Use "Tweaking"
Sun
Mon
Tue
Wed
Thur
Fri
Sat

Factors Effecting Progression

- Addictive properties of the drug itself
- Change of social group
  - Use patterns
  - Lifestyle disruption
- Intolerance of using population to "chipping"
  - High suspiciousness
  - Paranoia
- Are you "in or out?"

Other Social Issues Unique to Methamphetamine

It is an

EQUAL OPPORTUNITY

DESTROYER!

Why do women use methamphetamine?

- Energy
  - Changes in expectations of shared economic responsibility
  - Matched by changes in expectations regarding shared domestic responsibilities?
- Body image issues
- Enmeshment
- Personal delusion

How do we effectively

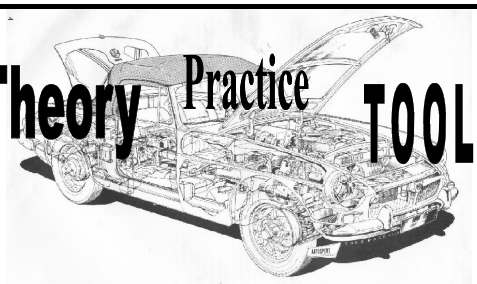
TREAT

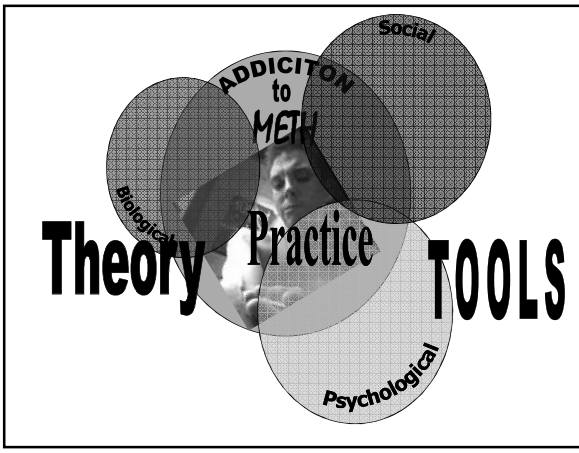
people who are addicted to

METHAMPHETAMINE

DELTA **Treatment Model**

Theory Practice TOOLS





Generally speaking, for someone to stop using meth they need to...

1. Stabilize their pattern of sleeping and eating.
2. Stop hanging around other people who use meth.
3. Have a sober social support group that will welcome them.
4. Learn to feel pleasure without using meth or other drugs.
5. Be able to handle bad feelings without abusing drugs.
6. Change some of their automatic expectations about meth.
7. Change some of their beliefs about meth and their relationship to it.

The Theory

The Structure
(What makes treatment possible)

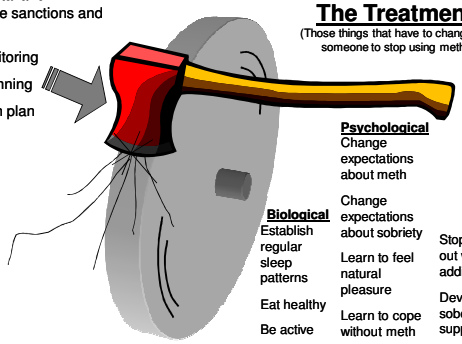
Accountability

Incremental and immediate sanctions and rewards

Use monitoring

Daily planning

Retention plan



The Treatment
(Those things that have to change for someone to stop using meth)

Psychological
Change expectations about meth

Change expectations about sobriety

Learn to feel natural pleasure

Learn to cope without meth

Biological
Establish regular sleep patterns

Eat healthy

Be active

Social
Stop hanging out with meth addicts

Develop a sober social support group

The Theory
Some basic PRINCIPLES

- The foundation of case management
- Focus on outpatient success
- Substance abuse *treatment* verses substance abuse *counseling*

CASE MANAGEMENT

Stabilize by Meeting Basic Needs

Inpatient treatment is only as good as the outpatient follow-up.

Outpatient Treatment

"Where the rubber meets the road."

Substance Abuse *COUNSELING*
versus
Substance Abuse TREATMENT

We need to be able to ***GET UNDER*** *the addiction!*

Treating

all three domains

What to expect of

Expectations

Why doesn't "punishment" work?

Why do people who experience problems related to their meth use continue to use?

Substance Abuse – Continuing to use a substance in spite of the fact that doing so has led to negative consequences.

Cognitive Explanations

Because of powerful <u>expectations</u>

- The expectation that *this time* (in spite of the fact that it may or may not have been that way for a while) . . . . . *IT'S GONNA BE GOOD!*
- It will *"Feel like the First Time!"*
- The expectation that bad consequences may or may not happen.
- "I'll take my chances."

BESIDES ! !

If something bad <u>is</u> going to happen, when will it happen?

TOMORROW ! !

(or later.)

And again, it *may or may not* happen!

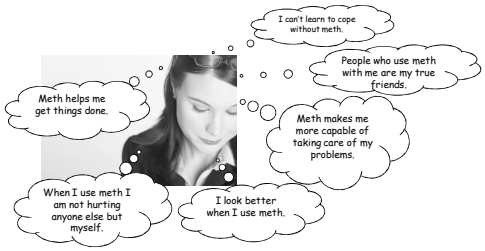
A HEARTACHE TODAY,

OR A HEADACHE TOMORROW.

The Practice of Changing Expectations about METH

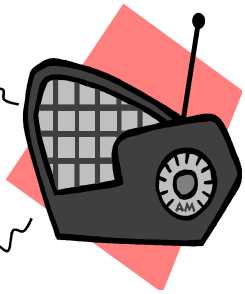
False Expectations or Beliefs	True Expectations or Beliefs	False Expectations or Beliefs	True Expectations or Beliefs

The Myths of Meth



I can learn to cope without meth!

Meth just made my problems worse!



I was unproductive when I was high!

I looked like DEATH when I was on meth.

Re-Callibrate the Conditioned Response of Pleasure

Pleasure — **Pleasure**

Conditioned Response (CR)

Unconditioned Response (UCR)

Turns on these good feelings…		Turns off these bad feelings…
1.		1.
2.		2.
3.		3.
4.		4.
5.		5.
6.		6.
7.		7.
8.		8.

These effects don't last.

It is essential for you to able to stop using meth that you connect feeling good with things that naturally feel good.

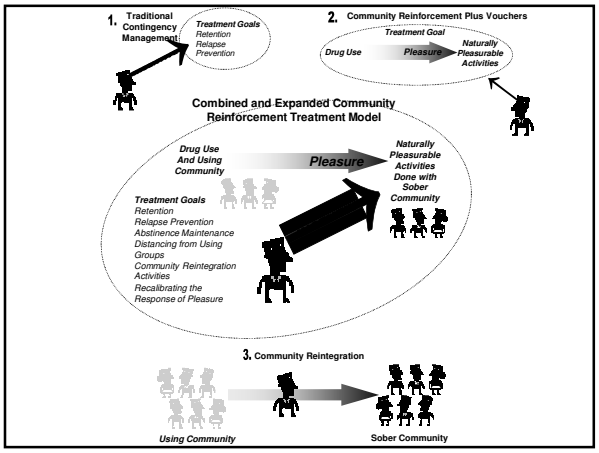
Some of the things you can do to learn to feel good naturally include:

- playing with your children (if you have any)
- going to a movie
- receiving a massage
- giving service
- eating a good meal
- being with sober friends
- playing games
- playing sports
- exercising
- going for hikes
- going for walks
- working outside
- learning a new skill
- talking to other people
- going for a swim
- handling a tough situation well, etc.

Contingency Management

Community Reinforcement

Community Reintegration



Plan for Retention

The Importance of Simply Keeping People in Treatment

"Retention of participants in treatment has been shown to be an important correlate of successful outcome" (Rawson, et al., 2004)

"Treatment retention has served as an overall indicator of the amount of treatment that patients receive and has proved to be a strong and consistent predictor of posttreatment outcomes" (Joe, Simpson, Dansereau, Rowan-Szal, 2001).

Baking versus Searing

What Works to Keep People in Treatment?

- "Counseling Rapport"
  - Dwayne Simpson's research
  - Immediate engagement in the therapeutic process
  - Unyielding commitment to the "sober" person
- Milestones and Contingency Management
  - Traditional contingency management models rely only on money
  - Can be therapeutically driven
    - Incorporate treatment plan into "rewards" for staying in treatment
    - Utilization of "vouchers"

Vouchers

- Involve community members
- Ask for donations
- Assess what the person really enjoys doing or having
  - From the beginning of treatment we need to know this
  - May need to help the client discover this about themselves

  Ask: What do people in the community enjoy doing?
  - ***If you had four hours a week to spend doing anything you would enjoy doing in your community, what would it be?***
  - ***Who from the community would do it with you?***

- Community college classes
  - Pottery
  - Photography
  - Spanish
  - Cycling
  - Golf
- Massage
- Lift tickets
- Bowling
- Food, food, food
- Local artists
- Rugby
- Soccer
- Hiking club
- Service clubs
- Movie tickets
- Learn a trade for fun
  - Masonry
  - Framing
  - Stucco
  - Finish carpentry
  - Veterinary medicine
- Golf
- Tennis
- Gardening
- Video production
- Computers
- Ranching
- Cooking
- Ballooning
- Rock collecting
- Book club
- Sculpting
- Auto mechanics
- Swimming
- Needle work
- Archeology
- Local historical societies
- Genealogy work
- Writing
- Poetry
- Wood working
- Crafts
- Community theatre

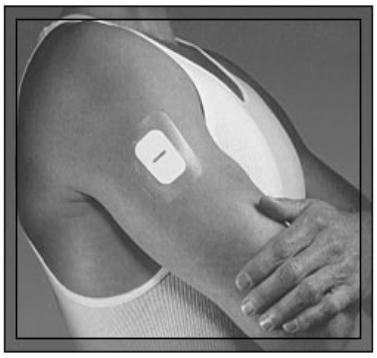
Retention Plan

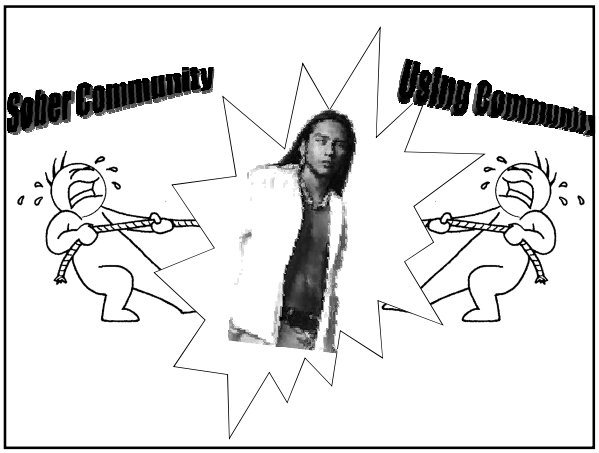
Sun	Mon	Tue	Wed	Thur	Fri	Sat
One week!		Start Tx		Lunch with son at McDonalds		Go to movie with "treatment confederate"
	Receive massage	Go out to eat at a nice restaurant with other "treatment confederate"		Start pottery class		Spend afternoon with son playing at park
Two weeks!		Go shopping and spend $50 gift certificate		Go to pottery class		

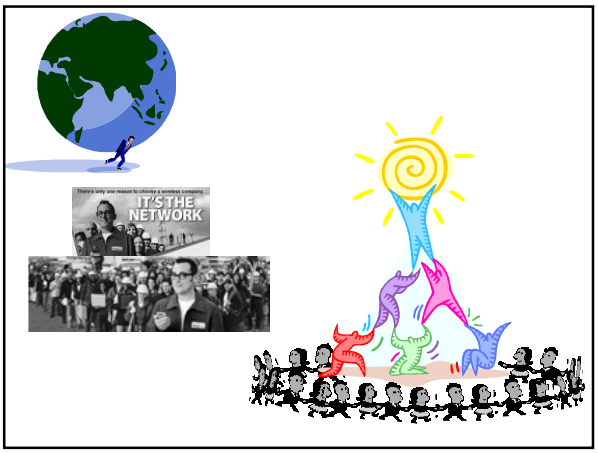
The Tools

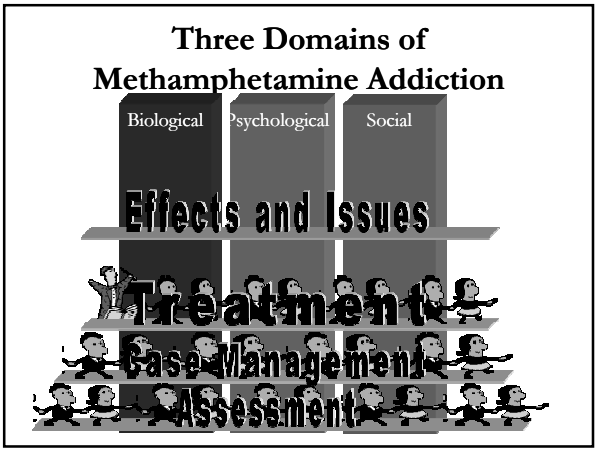
- The Governing force/administrator of the structure and of sanctions and rewards
- System in place to reliably deliver the sanctions and rewards
- Case Management Services
- Objective Behavioral Benchmarks to track treatment progress
- Daily Planner
  - Watches
  - Patches
  - Affirmation pads
- Use monitoring system
- Community force
- Trained therapists
  - Treatment manuals
  - Participant workbooks

Daily Reminders









Taylor Behavioral Health

Nicolas Taylor, Ph.D., CAC III
242 West Main Street, #9
Montrose, CO 81401
(970) 249-4448
(970) 249-4449 Fax
nt.tbh@montrose.net